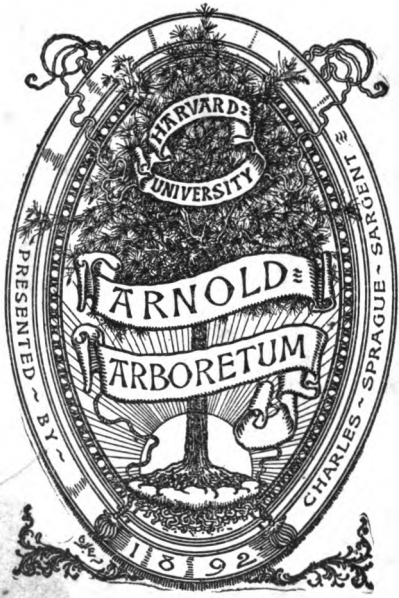

GUTTA PERCHA

ITS DISCOVERY, HISTORY,

REMARKABLE PROPERTIES, VAST UTILITY,

AND APPLICATION TO

SCIENTIFIC AND ORNAMENTAL PURPOSES,

ALSO ITS

ECONOMY AND IMPORTANCE

AS A

SANATORY AGENT.

WITH INSTRUCTIONS FOR SOLING BOOTS AND SHOES, JOINING DRIVING BANDS AND TUBING, AND FOR THE PREVENTION OF TOOTH-ACHE, BY STOPPING THE CARIES.

BY

WILLIAM DALTON.

LONDON:

J. O. CLARKE, 3 & 7, RAQUET COURT, FLEET STREET;

And sold by all Booksellers and Gutta Percha Dealers in Town and Country.

NOTICES FROM THE PRESS.

POISONED WATER.—It is not generally known to the public that the carbonic acid, or fixed air in water, *decomposes* lead pipes, and thereby imparts poisonous properties to the water Within the past few months, Sir Raymond Jarvis, of Ventnor, had occasion to repair the pumps which supplied his mansion, when, to his amazement, it was found that the large leaden feeding pipe was almost entirely eaten away by the water, and the interior covered with a white and poisonous crust. Sir Raymond has had the whole replaced with Gutta Percha Tubing, which, from its extraordinary alkali and acid-proof qualities, will preserve the water perfectly pure.—*Patent Jour.*

DOMESTIC TELEGRAPH.—The extraordinary despatch of Railways and Electric Telegraphs seem to have given an impetus to the national character in economizing time in an infinite variety of ways never even dreamt of, a few years ago. A scientific member of the Society of Friends has rendered the novel material of Gutta Percha Tubing subservient to an important saving of time and footsteps in the domestic circle. In consequence of the peculiar power possessed by this Tubing for the transmission of sound, he has applied it for the conveyances of messages from the parlour to the kitchen. Even a whisper at the parlour mouthpiece is distinctly heard when the ear is applied at the other end. Instead, therefore, of the servant having to answer the bell as formerly and then descend to the kitchen to bring up what is wanted, the mistress calls attention by gently blowing into the tube, which sounds a whistle in the kitchen, and then makes known her wants to the servant who is able at once to attend to them. By this means the mistress not only secures the execution of her orders in half the usual time, but the servant is saved a *double journey.* To those domestics who have one or two hundred journeys per day up a long flight of steps, this discovery will be no small boon, by reducing the number at least one-half.—*Daily News.*

GUTTA PERCHA.—This novel material, so famed for its utility, has lately risen to an extraordinary elevation in the metropolis, having reached even to the top of the Monument, from whence visitors to that noted column may look upon a Gutta Percha Tube one hundred and ninety feet in length, three inches in diameter, and five-eighths of an inch thick. This tube passes up the centre of the Monument from its base to the gallery, at which point it is *upheld by a flange, also made of Gutta Percha.* It is intended for the conveyance of water, and is, we understand, highly approved by the civic authorities, being light in weight and economic in price. The above adaptation of Gutta Percha affords another striking instance of its very general applicability.—*Times.*

THE GUTTA PERCHA PLANT.

Figure 1, flower, scarcely expanded. Figure 2, flower, with the corolla expanded. Figure 3, pistil Figure 4, transverse. Figure 5, vertical section of the ovary. Figure 6, another. Figure 7, scarcely mature fruit, half natural size. Figure 8, transverse section of ditto.

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1849.

GUTTA PERCHA.

THIS article has now been sufficiently long before the public, to have established its reputation as one of the most useful and economical productions of the age, and although one or two treatises have been sent forth, exhibiting its history, &c., still, we think they have rather aroused than satisfied curiosity; and, notwithstanding, that its strange appellation has become popular, and the demand for boot and shoe soles almost unlimited, yet the public in general, and more especially out of the Metropolis, is but little acquainted with the real nature of this material, and its singular adaptability to a large variety of purposes, both useful and ornamental. Like most other articles on their first introduction, Gutta Percha had to pass the ordeal of ridicule and prejudice, through which our greatest discoveries have reached us. All opposition, however, on that score has long since been abandoned and its importance and great value acknowledged.

HISTORY OF GUTTA PERCHA.

So much having been said and written on Gutta Percha, we think it unnecessary to enter into lengthened detail, or to transcribe the correspondence which has taken place amongst scientific men on the subject; our purpose will be answered by a brief record of the facts

connected with its discovery and introduction into this country.

It is now generally agreed, that this important article, which Sir William Hooker describes to be a vegetable substance, and belonging to the order "Sapotacæ," was discovered by Mr. Thomas Lobb, while on a botanical mission in Singapore and the other Malay Islands, where Forests (as yet untrodden by man) exist, principally consisting of the "Percha," which grows to an enormous size.

To Dr. Montgomerie, who transmitted the first sample of it to the Society of Arts in 1843, belongs the merit of its introduction into this country, for which the Society awarded him its gold medal. The Doctor ascertained from Sir James Brooke, the Resident at Sarawak, that the tree is indigenous to that place, and is known to the natives by the name of Niato, but few of whom were aware of the valuable properties of its juice, and those few merely using it for handles for their parangs or wood-choppers, instead of wood or horn.

Dr. Montgomerie further states, that there are three varieties of this substance, Gutta Girek, Gutta Tuban, and Gutta Percha, and that the name Gutta Percha is pure Malayan; "Gutta" meaning the gum or concrete juice of the plant, and "Percha"* the particular tree from which it is obtained. He entertained an impression that the tree itself must exist in Sumatra, and, perhaps, derive its name from thence, the Malayan name for Sumatra, being Pulo Percha; but though the Straits of Malacca were situated only one degree to the north of Singapore, he could not find that the substance had ever been heard of there, or in Sumatra.

The Doctor further observes, that his curiosity was first aroused, by his noticing a parang handle in the

* According to Dr. Montgomerie, the proper pronunciation of this word, which is Malayan, is Pertsha.

hands of a Malay woodsman, and on inquiry, found that the novel material of which it was made, could be moulded into any form by immersing it in boiling water until it was thoroughly heated, when it became plastic as clay, regaining when cold its original hardness and rigidity.

A writer in the journal of the Agricultural and Horticultural Society of India, says, "the Gutta Percha tree produces much esteemed fruits, good timber, useful gum for affording a vegetable oil or butter, an ardent spirit, and febrifuge medicine, and the flowers are used for food. The wood is soft, fibrous, and spongy, it is pale coloured, and traversed by longitudinal receptacles filled with the juice, forming ebony black lines."

The concrete juice differs from caoutchouc in its most important property. The action of boiling water upon all specimens of India-rubber—even the non-elastic varieties—is to soften the mass, and render it so extremely adhesive, that it is impossible to roll it out into any shape whatever. The caoutchouc remains in this viscid state for some time, when it hardens and becomes pliable. On the contrary, the Gutta Percha, when softened by the action of boiling water, (although softened pieces may be kneaded or pressed together, by which means they firmly adhere) exhibits no stickiness, and is, in this state, capable of being rolled into the thinnest sheets, and on exposure to a cooler temperature, it regains its original toughness and flexibility. From an analysis made by Drs. Moat and Maclaghan, it is found to consist of carbon, hydrogen, and a very small quantity of oxygen.

It is much to be regretted, that the method adopted by the natives of collecting the gum, should be of so wasteful a character. A magnificent tree, probably of several centuries' growth is cut down, the bark stripped off, and the juice collected and poured into a vessel, when, upon exposure to the air, it quickly coagulates.

From this prodigality, which is only paralleled by destroying the goose for one egg (for the product of the tree is thought not to exceed the value of 4s. 4d.), and the present enormous increase in the demand for Gutta Percha, one might reasonably argue its premature exhaustion; but such is not the case, for even supposing (an improbability, by the way) that human ingenuity will discover no more thrifty plan, yet the time for the supply to fail in meeting the demand must be far remote; seeing it has been already discovered, that the tree abounds over an area of at least half a million of square miles. It appears that the juice might be procured by tapping the tree periodically, and thus the Gutta Percha obtained in moderate quantities for many years; "but," observes Dr. Montgomery, "this method is too slow for the natives, and although the first discoverer of a tree might be inclined to tap, and thus preserve it, the next who found it would probably cut it down, there being no property in the trees of the forest, excepting where grants of land have been given."

Gutta Percha is principally imported in oblong masses, which are formed by rolling layers of it together in a soft state; a portion is received in thin scraps like the clippings of white leather. As imported, owing to the careless manner in which the juice is collected, the Gutta Percha is mixed with fragments of bark, wood, leaves, and other impurities; but when pure, it is in semi-transparent slices, of a colour which varies from a yellow brown to a pinkish white, and excessively tough, having much the appearance of horn. At ordinary temperatures it is non-elastic and as hard as wood, but capable of being indented by any pointed body. At an elevated temperature it becomes slightly elastic; but it will not, like caoutchouc, after being extended, return to its original size. From 200° to 212° Fahr, it is rendered exceedingly ductile; and in this condition it can be kneaded or pressed into any

form, which it retains, without contraction, upon cooling, when it again acquires its original hardness. "It is singular enough," writes the *Examiner* of December 23rd, 1848, "that although the Portuguese, Dutch, and English had, one or other of them, been nearly three centuries and a half on the spot where the tree grows, its valuable produce became known to Europeans only in 1843."

From Singapore the discovery has spread to the most northern limits of the Malay peninsular, to Sumatra, and to Borneo. The last number of the Journal of the Archipelago which we have seen, renders an account of the importations of Gutta for the first six months of the present year, showing that they were made from eight ports of the peninsular, five of the neighbouring islands, seven of Sumatra, and three of Borneo. The exports in the same period amounted to about 7,000 cwts., which would make the annual exports about 14,000. The first export, was in 1840, and it barely amounted to two cwts. Down to July last, the whole quantity exported was not less than 27,000 cwts. almost wholly to England. The collection of this commodity has, in fact, stimulated native industry in a degree never before experienced; and thus British skill, ingenuity, and capital, under the auspices of free trade, are furnishing employment to rude and remote tribes whose very names and localities are unknown to their benefactors. This is commerce; of which honest and judicious Dampier said, a century and a half ago, speaking of these very people, "The more trade, the more civility; and, on the contrary, the less trade, the more barbarity and inhumanity."

The following extract from the *Art Journal*, gives a very interesting account of the process of manufacturing this material:—

"The crude Gutta Percha is, in the first place, cut into thin slices in a very ingenious manner. Upon an

iron disc, which is connected by geering to the shaft of a steam-engine are fixed three radial knives, which are capable of being placed at any degree of projection. The lump of Gutta Percha being pressed against this iron plate is cut to any desired thickness, by its revolving, in a very rapid manner. The slices are afterwards collected and put into a vessel filled with hot water, in which they are left to soak, till they feel soft and pliable to the touch. The thoroughly softened pieces of Gutta Percha are then exposed to the action of 'the breakers and mincing-cylinders,' which make from 600 to 800 revolutions in a minute. It is thus broken up into shreds and fragments, and considerable quantities of earthy and other extraneous matters are beaten out of, and disengaged from it, the whole falling in a mingled mass into a vessel of cold water beneath, where the different materials assort themselves according to their specific gravities. Such pieces as are of pure Gutta Percha, or in which that substance predominates, float on the surface of the water, while most of the earthy and woody matters sink to the bottom. Being subjected to this process several times, the Gutta Percha is eventually freed from all extraneous substances, and is in a fit state for being moulded again into a mass. To effect this object, the soft and ductile material is submitted to the operations of the 'masticating machine' by which it is kneaded into a perfect uniform mass, after which it may be employed for any purposes of utility or ornament.

"As it is in many cases desirable to alter the degree of hardness of the Gutta Percha, and to give it various colours, Mr. Hancock has invented several processes, which he calls 'metallo-thionising,' for effecting this object. Sulphur, which however the patentee considers objectionable on account of its smell, orpiment, sulphuret of antimony, or any of the metallic sulphurets, are added to the Gutta Percha, and being well

mixed, the mass is exposed, under pressure, to a temperature varying from 260° to 300° Fahrenheit, and left in that state for a period varying from half an hour to two hours, according to the thickness of the materials. Colouring matters are united by simple mechanical mixing in the masticating machine. A very beautiful surface is given to the Gutta Percha, by exposing it for a minute or two to the action of the binoxyde of nitrogen, obtained by the solution of mercury or copper in nitric acid, or by immersing it in a boiling concentrated solution of chloride of zinc, for a period varying from one to five minutes, according to the strength of the solution, the materials in either case, being afterwards washed in an alkaline solution. Gutta Percha which has been thus treated, whether sulphuretted or unsulphuretted, becomes exceedingly smooth to the touch, and of a lustre approaching to metallic."

We are indebted to the courtesy of the Editor of the *Art Journal* for the cut of the Gutta Percha plant, which embellishes the present edition.

So recently as August, 1847, an interesting paper was read before the British Association, at Swansea, in which it was stated, "that the first articles manufactured in this country, were laid before the Society of Arts in 1844, and consisted of a lathe band, a short length of pipe, and a bottle case which had been made by hand, the concrete substance being made sufficiently plastic by immersion in hot water." Casts from medals were also produced, which attracted considerable attention from the Association.

It was also stated, "that various experiments had been made by the chemist of the Gutta Percha Company, to ascertain the strength of Gutta Percha when mixed with other matters, and also as to what pigments would mix with it without rendering it brittle, some of which were mentioned.

Under the influence of heat and pressure Gutta Percha

would spread to a certain extent, and more so if mixed with foreign matters; and all the mixtures composed of Gutta Percha and other substances which had been subjected to experiments, except that containing plumbago, were found to increase its power of conducting heat; but in its pure state, Gutta Percha *was an excellent non-conductor of electricity*.

Mr. Wishaw brought under the notice of the above mentioned Association, the valuable property which Gutta Percha possesses for the conveyance of sound, by exhibiting the Telakouphanon or Speaking Trumpet, through which, by simply whispering, the voice could be audibly conducted for a distance of three-quarters of a mile and a conversation kept up. This would be highly useful in manufactories, and even in private houses, where they would supersede bells, the tubes being so cheap. By branch pipes sounds could be conveyed to different rooms. Not the least valuable recommendation of Gutta Percha, consists in its cheapness and health-preserving properties. Cheapness in itself is not a special recommendation to the rich, but surely as a preservative of health, even they must consider Gutta Percha an important desideratum; whilst to those engaged in "making money," whether for a subsistence only, or to amass a fortune, Merchant Prince, or humble Artizan, the saving of health and money must be a *sine quâ non*. Therefore, we say to all, use Gutta Percha soles to your boots or shoes, and you will save yourself the expence of new ones, and in all probability doctor's bills, for we solemnly assure the reader, that since we have adopted this excellent material we have only required one pair of boots where we formerly had two. We have also the testimony of friends, in whose families it has rendered such important benefits, that a Gutta Percha mania runs through their households, and even promises to rival the "knitting" penchant in their affections. Regarded as a manufacturing ingredient, it possesses powers truly

marvellous. Already, among other articles, there has been manufactured a Gutta Percha submarine telegraph, which consists of a tube for the conveyance of telegraphic wires, and which, in order to prevent its being acted upon by external matters, is banded round by a small cord, and, from its perfect pliability, can easily be conveyed along the bottom of deep water.

We find, from the "New York Tribune," that the wires of the New York and Philadelphia Telegraph are conveyed through a Gutta Percha tube across the Hudson, laid at the bottom of the river, in the track of the ferry boats.

Gutta Percha has, likewise, been used in the formation of a tube which passes up the centre of the Monument from its base to the gallery, at which point it is upheld by a flange, also formed of Gutta Percha. This tube is intended for the conveyance of water; and, from its lightness of weight and economy, has commanded the full approval of the civic authorities.

Again—As an antidote for that painful malady, the tooth-ache, it will be found effective. Several of our acquaintance have had carious teeth (from which they formerly suffered severely) filled with this material and have experienced considerable benefit. The method of application is as follows:—

Remove the decayed portion, which may easily be effected with the point of a penknife, clean out the tooth with wadding, so as to remove the saliva, then hold a piece of Gutta Percha over the fire until it becomes quite soft, and while in that state press it into the cavity, in a few minutes it will become hard, the tooth be made useful, and pain prevented.

Gutta Percha, while it is a non-conductor of heat, is, at the same time, perfectly impervious to humidity; and what is, to delicate subjects, of equal importance, a repellant of frigidity; so that the wearer of soles of this

material is encased in a tower of strength against the heat of summer, the cold of winter, and the dangerous damps of November; and we feel perfectly convinced that we shall not lay ourselves open to a charge of empiricism by firmly asserting that, as the material becomes more in vogue, coughs, colds, rheumatisms, and many of the ills "which flesh is heir to," will disappear, or, at least, become less prevalent.

How often have we shuddered at the paper soles so common to the shoes which encase the pretty feet of our fair countrywomen—so dangerous to the delicate, and we, therefore, advise them immediately to wear Gutta Percha soles, and thereby secure the double advantages of health and comfort, without detracting from the important requisites of neatness and beauty.

The Gutta Percha may in many ways be rendered fluid: in this state it forms a valuable varnish which is quite impermeable to water. It may also be mixed with colours in printing, and thus a degree of permanency given to impressions which they would not otherwise possess.

Its importance in bands for machinery is admitted on all hands. There can be no greater proof of this than that machine bands of this material have been working in Her Majesty's Dock Yards, as also at the Polytechnic Institution for eighteen months.

For harness, it supersedes leather, both in durability, and the ease and facility with which a repair can be made instanter, without the necessity of stitching.*

As a plaister for healing cuts and wounds no house should be without it—for this purpose it ought to be dissolved in chloroform.

We find also, amongst other articles made from this extraordinary material, the following:—Whips, whip-thongs, cords for fishing-lines, nets, fishing-floats, lining

* See directions for joining driving-bands.

for ladies' dresses (which is particularly adapted for ball dresses, gas and water-pipes, floor-cloths, book-backs and embossed covers, printing type, ornamental mouldings, picture frames, copies of coins and medals, medallions,* dolls, carriage traces, leggings, brush backs, drinking cups, toilet services, engine buckets, cigar cases, powder flasks, fine tubing for chemical purposes, bougies, catheters, staves, stethescopes, ear trumpets, thick material for splints, cords for window blinds, sashes, &c., fine cord, and thread for philosophical purposes, sheeting for carriages, travelling cases, gig aprons, cricket and bouncing balls, inkstands, ornamental card salvers and toilet trays, trays, ladies and gentlemen's clogs.

A strong and perfectly waterproof fabric is formed by simply laying a number of Gutta Percha threads side by side upon a foundation of cotton, or linen, or other textile fabric, and passing the two materials between heated rollers, which has the effect of cementing the threads firmly to the cloth and to one another; and such fabrics may, by using threads of different sizes and colours, have every variety of striped appearance given to them.

It has been proposed to employ the Gutta Percha for the purpose of forming embossed alphabets, maps, and designs for the blind; and the facility with which this may be done, and the great sharpness and beauty of the copy produced, renders this an exceedingly valuable application.

The use of this material in binding books is important, as giving additional strength to the book. And from the durability of the Gutta Percha, we may thus, there is little doubt, rest satisfied that the treasures of our libraries will be less liable to the destructive attacks of insects, than they are where paste, glue, and leather are employed.

A paper very difficult to rend, and which will therefore be found extremely suitable for documents exposed to much tear and wear, as bills of exchange, share cer-

tificates, &c., and also for wrappers and envelopes of all sorts, is formed by interposing between two sheets of paper pulp, threads of Gutta Percha, laid crosswise, like net-work, at distances of an inch or two (more or less) apart, and combining the two sheets of pulp by means of the machine for which Mr. John Dickinson, of Nash Mill, obtained letters patent for England, of date the 17th October, 1839, or of any other suitable machinery.

The Gutta Percea thread may be also plaited, either in the naked or sheathed states, into hats, caps, and bonnets, or into bags, baskets, and basket-work, or into coverings for chairs (as a substitute for cana), or into wh ps, bridles, and reins, or into any other similar articles.

In fact, so numerous and varied are the purposes to which Gutta Percha has been already applied, and its adaptability in connection with art and manufactures so admirable, that its future history promises no common interest. Each day gives new proofs of some ingenious application of its convertible properties. Beautiful groups of figures, graceful in design, and admirably executed, may be seen in the most fashionable depôts for this novelty, and it is not impossible that some future Stowe may number its productions among its works of art, and every rustic villa will consider itself wanting in taste without the possession of some specimens of elegance, utility, and economy in its grounds, formed from this remarkable substance.

Although it is now pretty well known who were the discoverers of Gutta Percha, we believe it is not generally understood that the major part of its various applications and immense distribution are mainly owing to the great energy and ability displayed by the Gutta Percha Company; who, by their liberal outlay of capital, taste, and aptitude for design, may be considered to have rendered a benefit to the public.

The Company, in their manufactures, have not re-

stricted themselves to articles of utility alone, but have liberally contributed to the fine arts. The imitation carvings, their moulded fancy articles are exquisite, and, in our humble opinion, far excel anything done in burnt wood or relievo leather; the points are well brought up, exquisitely finished, and after the eye has contemplated the outline, it has the solid satisfaction of finding the detail perfect. In a word, these recherché productions have more the appearance of having emanated from a master hand than from machinery.

We cannot leave our subject, without congratulating this enterprizing Company upon the well-merited success with which their exertions have been met, and which, we feel assured, must have exceeded all expectations.

The question has been put—Will it not injure existing manufactures, and particularly cordwainers? We answer—Most great inventions necessarily injure, for the time being (either really or imaginary), a particular class.

The invention of the printing press, for instance, took from the mouths of thousands (for a period) their "daily bread." But who shall gainsay, that if it "robbed Peter," it has since "paid Paul,"—and with enormous interest. Old trades, like old governments, must concede something to the progress of the age, and "ancient prejudices must," inevitably, "give way to modern improvements."

There was a time, when the short-sighted views of inventors induced them to introduce their "Newcomes" in company with that "incubus"—high price, which rendered it a matter of impossibility for the "masses" to receive any benefit from the invention, at least, until it had become *passè* amongst the wealthier classes; when, as a natural consequence, the price fell. Not so with Gutta Percha—for, from the moment of its introduction, its extraordinary low price placed it within the reach of the humblest.

There was another difficulty in the way of a discovery, or invention, becoming known: people would scarcely believe advertisements, and they were too chary of their money to risk it in a trial. But now, thanks to the improvements in the "press," and the increasing intelligence of the people, millions of tracts, descriptive of any given invention, or discovery, can, with the greatest facility and rapidity, be showered amongst the population, and one or two find their way to the table of the humblest artizan in the empire; and thousands, who have been suffering for years, may, from a hint suggested therein, reap, for the future, great benefit for themselves and their families, not only at a cost within their means, but absolutely not missed from their exchequer. Such, indeed, is our motive in ushering this little book before the public, and if we are the means of saving one individual from a cough, cold, or catarrh, our end is gained.

The annexed instructions are copied from those issued by the Gutta Percha Company.

LONDON
J. O. CLARKE, PRINTER, 3 & 7, RAQUET COURT, FLEET STREET.

DIRECTIONS FOR PUTTING ON

PATENT GUTTA PERCHA SOLES.

Thoroughly dry the sole of the boot or shoe, and rough it well with a rasp.* With the finger rub well in a thin coat of warm solution—let that dry, then hold it to the fire, and whilst warm, put on a SECOND coat of solution *spread thicker than the first;* let this dry also. Then take the Gutta Percha Sole, hold that to the fire in one hand and the boot or shoe in the other, when they will speedily become sticky; immediately lay the sole on, beginning at the toe, pressing it gradually until it adheres firmly in every spot. In half an hour pare off carefully with a sharp knife. When the sole is too thick to become sufficiently pliable by holding to the fire, let it be immersed in hot water until soft enough to fit the last; when taken out wipe it perfectly dry and hold to the fire as before directed. As the grease and dressing of the upper leather must necessarily more or less stick to the hands of the workman, it is desirable as a last operation slightly to moisten a sponge with pure Naptha, and rub over therewith the surface of the sole, and also that of the boot or shoe to which it is to be applied, previously to warming them at the fire, thus removing all grease and ensuring perfect adhesion.

INSTRUCTIONS FOR

PREVENTING SLIPPING IN FROSTY WEATHER.

Take a piece of course cloth towelling, wrapper, hair cloth, woollen cloth, listing, or chamois leather, spread thereon a thick coat of warm Gutta Percha Solution, (may be done over night); let this dry. Take a piece of the spread cloth of the size required, warm it and the sole of the boot or shoe simultaneously, bring them together by pressure either of the hand or by standing upon them. Warming the sole of the boot or shoe, and standing upon sand, gravel, saw-dust, or ashes, may suffice when the above directions cannot immediately be complied with.

* The Registered Saw Knife or Rasp, invented by ROBT. YEATES & Co. recommended by the Gutta Percha Company, and sold by the principal dealers, is considered the best for the purpose.

DIRECTIONS FOR USING

PATENT GUTTA PERCHA SOLUTION.

Warm the solution as glue is commonly heated, by placing in boiling water a vessel containing the required quantity to be used. Apply it in a warm state, stirring it before using. Be careful that the water is not allowed to mix with the solution. The solution may be reduced in consistence by adding *pure Coal-tar Naphtha*, which can be obtained from any of the Gutta Percha Depots.

DIRECTIONS FOR JOINING

PATENT GUTTA PERCHA DRIVING BANDS.

Cut the ends of the band obliquely, at an angle of 30 or 40 degrees, making the band rather shorter than the length required. Secure one end to a board or bench, by a clamp or a couple of nails. Having heated a piece of iron (say one inch broad and half an inch thick,) to the temperature of a laundress's smoothing iron, so that it will soften the Gutta Percha *without burning or discolouring it*, place the iron between the cut edges of the band, pressing them against it (*keeping the Band always in a straight direction,*) until the edges are thoroughly softened, and in a sticky state; then remove the iron, and press the two edges together *as closely as possible*, after which a couple of nails may be driven into the loose end of the band, to keep it in its place. The ridge or burr may be pressed down as much as possible into the substance of the band, by a heavy weight, or by means of a clamp, so as to make a smooth joint. A band of ordinary thickness will be ready for use in ten or fifteen minutes, or sooner, if cold water be applied.

FLAT JOINTS

may be made in like manner, by shaving down the ends a little, (so as, when laid one on the other, not to be much thicker than the band,) heating the *surface* of the splices, and pressing them together by a weight or clamp. *Avoid heating the Band throughout.* Pare the edges when cold.

CROSS BANDS.

If there be much friction or rapid motion with the cross bands, they must be separated by a roller, or fixed round an iron bar.

LONDON:
J. O. CLARKE, PRINTER, 3 & 7, RAQUET COURT, FLEET STREET

lowing valuable Testimonials have been forwarded to the Gutta Percha Company.

...on JOHN TAYLOR GORDON, Esq., M.D.,

(Heretofore Physician to his late Majesty, and H.R.H. The Duke of Cambridge, but now retired.)

(Copy.)

34, Somerset Street, Portman Square,
London, April 10th, 1850.

Gentlemen,

Without reference to the variety of useful and ornamental purposes to which Gutta Percha is adapted, I consider it in a **sanatory point of view to be a most fortunate and important discovery.**

I have already (from a sole regard to the public benefit) certified my decided approval of it for the under soles of Shoes, and I have only to add, that I find it equally well applied to **walking or dress shoes and boots,** by your Agents.

As the supply of **pure water** is so essential to health, and leaden pipes and cisterns are so objectionable, I cannot too highly recommend the Gutta Percha for **Tubing & Lining.**

I am, Gentlemen,
Your humble Servant,
J. TAYLOR GORDON.

(The above is the Second Voluntary Testimonial.)

From Dr. MURRAY, of Hull.

(Copy.)

Portland Place, Hull,
March 28th, 1850.

Gentlemen,

It is impossible to conceive of anything more injurious or destructive to the health of the community, than the use of **leaden pipes** for the conveyance of water. The paisonous Salts of Lead thereby communicated, are most insidious and subtile. **I hail with gratitude the substitution of Gutta Percha Tubing. I have had the leaden pipe of my own house removed, and supplied by one of Gutta Percha.** Nothing can be better. I have also recommended it to others, who have adopted the expedient.

I am, respectfully, Gentlemen,
Your obedient Servant,
J. MURRAY, PH. D.

The Gutta Percha Company, Patentees,
18, Wharf Road, City Road, London.

APPLICATIONS OF GUTTA PER

DOMESTIC, &c.

Soles for Boots and Shoes, which keep the feet both warm and dry.
Lining for Cisterns, &c.
Picture Frames.
Looking-glass Frames.
Ornamental Mouldings.
Bowls, Drinking Cups.
Jars, Soap Dishes, Vases.
Ornamental Inkstands.
Noiseless Curtain Rings.
Card, Fruit, Pin, and Pen Trays.
Tooth Brush Trays.
Shaving Brush Trays.
Window Blind Cord.
Clothes' Line.
Coloured Material for Amateur Modelling.
Ornamental Flowerstands and Pots.
Sheet for damp Walls and Floors.
Conveyance of Water, Gas, &c.
Drain and Soil Pipes.
Gutta Percha Tubing is used as a "Domestic Telegraph," in lieu of [Bells.
Jar Covers.
Tubing for Watering Gardens, Washing Windows, &c.
Lining for Bonnets.
Watch Stands.
Shells.
Foot Baths.
Balsam for Cuts, Chilblains, &c.
Lighter Stands.

SURGICAL.

Splints.
Thin Sheet for Bandages.
Stethescopes.
Ear Trumpets.
Liquid Gutta Percha for Wounds.
Bed Straps.
Bedpans for Invalids.

CHEMICAL.

Carboys.
Vessels for Acids, &c.
Syphons.
Tubing for conveying Oils, Acids, Alkalies, &c.
Flasks.
Bottles.
Lining for Tanks.
Funnels.

MANUFACTURING.

Buckets, Mill Bands.
Pump Buckets, Valves, Clacks, &c.
Felt Edging for Paper Makers.
Bosses for Woollen Manufacturers.
Flax Holders.
Shuttle Beds for Looms.
Washers.
Bowls for Goldsmiths.
Bobbins.
Covers for Rollers.
Round Bands and Cord.
Breasts for Water Wheels.
Oil Cans.

FOR OFFICES, &c.

Wafer Holders, Inkstands.
Ink Cups, (in lieu of glass.)
Pen Trays, Cash Bowls.
Washing Basons, &c., (which cannot be broken)
Tubes for Conveying Messages.
Canvas for covering Books, &c.
Architects' and Surveyors' Plan Cases.

AGRICULTURAL.

Tubing for conveying Liquid Manure.
Lining for Manure Tanks.
Driving Bands for Thrashing Machines, &c.
Traces, Whips.
Buckets, Bowls, &c.

ELECTRICAL, &c.

Covering for Electric Telegraph Wire.
Insulating Stools.
Battery Cells.
Handles for Discharging Rods, &c.
Electrotype Moulds.

ORNAMENTAL.

Medallions.
Brackets.
Cornices.
Console Tables.
An endless variety of Mouldings, in imitation of Carved Oak, Rosewood, &c., for the decoration of rooms, cabinet work, &c.
Picture Frames.

USE

Sou-We
Pilot's Ha
Life Buoy
more buoy
Buckets, Pu
Hand Speak
Drinking Cup
Powder Flasks
Fishing Net Flo
Sheathing for Sh
Waterproof Can
Air-tight Life Boat Cells
Tubes for Pumping Wat
from the Hold to the Dec
Round & Twisted Cord
(these cords do not sin
in the water like th
hempen ones.)
Lining for Boxes
Speaking Tubes f
municating between th
Man on the Look-ou
and the Helmsman
Captain, &c.
Tiller Ropes.

MISCELLANEO

Suction Pipes fo
Fire Buckets. [En
Stable Buckets.
Lining for Coffins.
Sounding Boards for Pul
Tap Ferules. [pits
Communion Trays.
Tubing for Ventilation.
Hearing Apparatus i
Churches and Chapel
for Deaf Persons.
Cricket Balls.
Bouncing Balls, Golf do.
Fencing Sticks.
Portmanteaus.
Police Staves.
Life Preservers.
Embossed Book Backs
Embossed Globes & Map
for the Blind.
Railway Conversation
Miners' Caps. [Tub
Beds for Paper Cutti
Machine Knives.
Fringe for Mourning
Coaches.
Fine and Coarse Thread.
Alarum Tubes for Mines
Official Seals, &c. [&c
Envelope Boxes.
Bible Backs.
Prayer Book do.
Powder Flasks.
Box Lids, Dolls, &c., &c.

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